

REMARKS

Claims 1-26 are pending. The Office Action rejected claims 1-26. The Applicant has amended claim 1. The Applicant respectfully requests reconsideration and allowance of the pending claims in light of the following.

I. Claim Objections

The Office Action objected to claim 1 contending that the phrase "drift shaft" should be changed to --drive shaft--. The Applicant has amended claim 1 as suggested. In light of such amendment, withdrawal of the present objection is earnestly solicited.

II. Claim Rejections Under 35 U.S.C. §102 (TrepI)

The Office Action rejected claims 1-10, 18, 21, and 23-26 under U.S.C. §102(b) as being anticipated by U.S. 5,424,582 to TrepI, II et al., hereinafter "TrepI". The Applicant has amended claim 1. Reconsideration and allowance of claims 1-10, 18, 21, and 23-26 is earnestly requested.

A. TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM

As noted at MPEP 2131.01:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). >"When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art." *Brown v. 3M*,

265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) (claim to a system for setting a computer clock to an offset time to address the Year 2000 (Y2K) problem, applicable to records with year date data in "at least one of two-digit, three-digit, or four-digit" representations, was held anticipated by a system that offsets year dates in only two-digit formats). See also MPEP § 2131.02.< "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)

As explained in detail below, the Applicant respectfully submits that Trepl fails to teach each and every element of claims 1-10, 18, 21, and 23-26. As such, Trepl does not anticipate the invention of claims 1-10, 18, 21, and 23-26.

B. Claim 1

Claim 1 is directed to an apparatus for converting the motion of sea waves into a source of useful output that comprises a float device in which the float device has a natural frequency of oscillation which is substantially resonant with the frequency of a sea wave. The Applicant respectfully submits that Trepl does not explicitly and/or inherently teach such aspects of claim 1.

The Office Action contends that Trepl at "column 3, lines 17-30 disclose the concept that the floats has the natural frequency substantially resonant with the sea wave." The Applicant respectfully disagrees with this assessment of Trepl. For the sake of discussion, Trepl at column 3, lines 17-30 states:

It will be seen that the shaft 12 in this invention is driven essentially continuously: by float 22 during a rising wave, and by float 32 during a falling wave. The use of two

floats with unidirectional drives rather than one float with a bidirectional drive has several advantages. For one, a float which must do work in both directions of movement never gets a chance to use the full height of the wave (for example, on a falling wave, the float, because of the drag of the drive shaft, will already encounter a new rise in the wave before it can reach the bottom of the wave trough); and for another, the use of separate rising and falling floats allows the use of the most efficient float construction for each of the rising and falling motions.

The Applicant respectfully submits there is no mention in cited section of Trepl regarding the float 22 or the float 32 having a natural frequency substantially resonant with the sea wave. The cited section mere explains advantages of its two float system over one float systems. Of note, none of the discussed advantages address or otherwise reference resonant frequencies.

The paragraph following the above cited section of Trepl is a bit more on point and reads as follows:

In order for floats 22 and 32 to drive the shaft 12 without overlap, it is necessary to dispose the two floats side by side along a line parallel to the wave fronts 38 (FIG. 2), i.e. perpendicular to the direction 40 of wave motion. For this purpose, it may be advantageous to journal the platform 10 for pivotal movement about an axis 42 (FIG. 1), or to pivot the entire system, so that varying directions of forward wave motion may be accommodated.

The above paragraph explains positioning the two floats side by side along a line parallel to the wave fronts 38 to ensure that the floats 22 and 32 drive the shaft 12 without overlap. Such positioning of the floats 22 and 32 may take into account the frequency of the wave fronts 38. However, there is no indication that even if the floats 22 and 32 are positioned such that the floats 22 and 32 align with the frequency of the

wave fronts 38 that the floats 22 and 32 would have a natural frequency which is substantially **resonant** with the sea wave.

Page 1 of the "Resonance" article from **Wikipedia** is attached hereto for the Examiner's convenience. In particular, the "Resonance" article states in part that:

In physics, resonance is the tendency of a system to oscillate at larger amplitude at some frequencies than at others. These are known as the system's resonant frequencies (or resonance frequencies). At these frequencies, even small periodic driving forces can produce large amplitude vibrations

The Applicant respectfully submits that Tepl simply does not teach designing the floats 22 and 32 such that they take advantage of such physical phenomena. As a result, Tepl simply does not teach a float device that has a natural frequency of oscillation which is substantially **resonant** with the frequency of a sea wave as required by claim 1.

Withdrawal of the present rejection of claim 1 is earnestly solicited.

C. Claims 2-10

Each of claims 2-10 includes claim 1 as a base claim and is therefore allowable for at least reasons similar to those presented above in regard to claim 1. Moreover, the Applicant respectfully points out that the Official Action did not specifically identify sections of Tepl that teach the limitations of claims 2-10. After a detailed view of Tepl, the Applicant respectfully submits that Tepl does not teach at least some of the limitations of claims 2-10. In particular, in regard to claim 2, Tepl does not appear to teach in which the mass of the float device is adjustable. In regard to claim 3, Tepl does

not appear to teach in which the float device comprises an interior chamber and means for admitting water into the chamber and/or expelling water from the chamber.

If the Examiner elects to maintain the present rejection of one or more of claims 2-10, the Applicant respectfully requests the Examiner to specify with more particularity where Tepl teaches each limitation of each rejected claim so that the Applicant may better assess the propriety of such rejection.

For one or more of the above reasons, the Applicant requests the present rejection of claims 2-10 be withdrawn.

D. Claims 18, 21, and 23-26

Each of claims 18, 21, and 23-26 is directed to a method of converting the motion of sea waves into a source of useful power output that comprises disposing a float device on a body of water so that the float device floats thereon, in which the natural frequency of vertical oscillation of the float device is substantially resonant with the frequency of the sea waves. The Applicant respectfully submits that Tepl does not teach in which the natural frequency of vertical oscillation of the float device is substantially resonant with the frequency of the sea waves. Accordingly, each of claims 18, 21, and 23-26 is allowable for at least reasons similar to those presented above in regard to claim 1.

Moreover, the Applicant respectfully points out that the Official Action did not specifically identify sections of Tepl that teach the limitations of claims 21, and 23-26. If the Examiner elects to maintain the present rejection of one or more of claims 21, and 23-26, the Applicant respectfully requests the Examiner to specify with more

particularity where Tepl teaches each limitation of each rejected claim so that the Applicant may better assess the propriety of such rejection.

For one or more of the above reasons, the Applicant requests the present rejection of claims 18, 21, and 23-26 be withdrawn.

III. Claim Rejections Under 35 U.S.C. §102 (Salvatore)

The Office Action rejected claims 1, 3-10, 14-18, 21, and 23-26 under U.S.C. §102(b) as being anticipated by GB 2064665 to Salvatore, hereinafter "Salvatore". The Applicant has amended claim 1. Reconsideration and allowance of claims 1, 3-10, 13-18, 21, and 23-26 is earnestly requested.

In regard to claims 1, 3-10, 14-18, 21, and 23-26, the Office Action merely states as follows:

Salvatore discloses a wave power generating plant comprising floats 24, 34, with counterweights 14, a structure with a drive shaft 13, generator for generating electricity, transmission with flywheels 15-17 so that the float has the natural frequency substantially resonant with the sea wave.

The above is the entirety of the explanation of the rejection of claims 1, 3-10, 14-18, 21, and 23-26. Moreover, the Applicant respectfully disagrees with the above assessment of Salvatore. In particular, the Applicant has been unable to locate where Salvatore teaches in which the float device has a natural frequency of vertical oscillation which is substantially **resonant** with the frequency of a sea wave. Moreover, the Office Action has not identified where Salvatore provides such a teaching.

Since Salvatore does not disclose such aspects of claims 1, 3-10, 14-18, 21, and 23-26, Salvatore does not anticipate the invention of such claims. Withdrawal of the present rejection of claims 1, 3-10, 14-18, 21, and 23-26 is earnestly solicited.

The Applicant respectfully points out that the Official Action did not specifically identify sections of Salvatore that teach the limitations of claims 3-10, 14-17, 21, and 23-26. If the Examiner elects to maintain the present rejection of one or more of claims 3-10, 14-17, 21, and 23-26, the Applicant respectfully requests the Examiner specify with more particularity where Salvatore teaches each limitation of each rejected claim so that the Applicant may better assess the propriety of such rejection.

IV. Claim Rejections Under 35 U.S.C. §102 (Lucia)

The Office Action rejected claims 1, 4-10, 14-18, 21, and 23-26 under U.S.C. §102(b) as being anticipated by U.S. 4,319,454 to Lucia, hereinafter "Lucia". The Applicant has amended claim 1. Reconsideration and allowance of claims 1, 4-10, 14-18, 21, and 23-26 is earnestly requested.

In regard to claims 1, 4-10, 14-18, 21, and 23-26, the Office Action merely states as follows:

Lucia discloses a wave power generating plant comprising floats 13, with counterweights, a structure with drive shaft 8, generator 18 for generating electricity, transmission with clutch and ratchet wheel 9 so that the floats has the natural frequency substantially resonant with the sea wave.

The above is the entirety of the explanation of the rejection of claims 1, 4-10, 14-18, 21, and 23-26. Moreover, the Applicant respectfully disagrees with the above assessment

of Lucia. In particular, the Applicant has been unable to locate where Lucia teaches in which the float device has a natural frequency of vertical oscillation which is substantially **resonant** with the frequency of a sea wave. Moreover, the Office Action has not identified where Lucia provides such a teaching.

Since Lucia does not disclose such aspects of claims 1, 4-10, 14-18, 21, and 23-26, Lucia does not anticipate the invention of such claims. Withdrawal of the present rejection of claims 1, 4-10, 14-18, 21, and 23-26 is earnestly solicited.

The Applicant respectfully points out that the Official Action did not specifically identify sections of Lucia that teach the limitations of claims 4-10, 14-17, 21, and 23-26. If the Examiner elects to maintain the present rejection of one or more of claims 4-10, 14-17, 21, and 23-26, the Applicant respectfully requests the Examiner specify with more particularity where Lucia teaches each limitation of each rejected claim so that the Applicant may better assess the propriety of such rejection.

V. Claim Rejections Under 35 U.S.C. §103 (Lucia)

The Office Action rejected claims 11-13, 19-20, and 22 under U.S.C. §103(a) as being unpatentable over Lucia. Each of claims 11-13, 19-20, and 22 includes one of claims 1 and 18 as a base claim and is therefore allowable for at least reasons similar to those presented above in regard to the respective base claim. Withdrawal of the present rejection of claims 11-13, 19-20, and 22 is earnestly solicited.

VI. Final Matters

The Office Action makes various statements regarding: the pending claims; the Tepl, Salvatore, and Lucia references; 35 U.S.C. §102 and 35 U.S.C. §103; and the

state of the art that are now moot in view of the previously presented amendments and/or remarks. Thus, the Applicant has not addressed all of such statements at the present time. However, the Applicant expressly reserves the right to challenge any of such statements in the future should the need arise.

SUMMARY

The Applicant submits that the pending claims are in condition for allowance. The Applicant thus requests an expeditious notice of allowability with respect to all pending claims. If the Examiner disagrees, the Applicant requests an Examiner Interview to discuss the pending claims and the restriction/election requirement. The Applicant invites the Examiner to contact the undersigned at 312-238-8600 to arrange such an interview.

The Commissioner is hereby authorized to charge additional fees or credit overpayments to the deposit account of McAndrews, Held & Malloy, Account No. 13-0017.

Date: September 9, 2009

Respectfully submitted,

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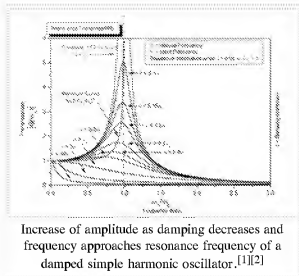
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Resonance

From Wikipedia, the free encyclopedia

In physics, **resonance** is the tendency of a system to oscillate at larger amplitude at some frequencies than at others. These are known as the system's **resonant frequencies** (or **resonance frequencies**). At these frequencies, even small periodic driving forces can produce large amplitude vibrations, because the system stores vibrational energy. When damping is small, the resonant frequency is approximately equal to the natural frequency of the system, which is the frequency of free vibrations. Resonance phenomena occur with all types of vibrations or waves: there is mechanical resonance, acoustic resonance, electromagnetic resonance, nuclear magnetic resonance (NMR), electron spin resonance (ESR) and resonance of quantum wave functions. Resonant systems can be used to generate vibrations of a specific frequency (e.g. musical instruments), or pick out specific frequencies from a complex vibration containing many frequencies.

Resonance was discovered by Galileo Galilei with his investigations of pendulums and musical strings beginning in 1602.^{[3][4]}



Increase of amplitude as damping decreases and frequency approaches resonance frequency of a damped simple harmonic oscillator.^{[1][2]}

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Examples

One familiar example is a playground swing, which acts as a pendulum. Pushing a person in a swing in time with the natural interval of the swing (its resonance frequency) will make the swing go higher and higher